SANDIA LAB NEWS

VOL. 21, NO. 8, APRIL 11, 1969

Jack Merillat Ken Sutton

Two Department Promotions Announced

Two department-level promotions have been announced for organization 3000. Promoted were Jack Merillat to Employee Benefits and Services Department 3120, and Ken Sutton to Employment Department 3250, both effective April 1.

Jack joined Sandia as a technical staff member in 1948 and served in the Field Test Organization for two years before moving to Employee Services. In 1953, he became an administrative assistant to the Weapons and Components organization. He moved back to personnel in 1957 and was promoted to supervisor of Employment Division 3251 in 1963 where he has remained until his present promotion.

A graduate of the University of Arizona, Jack has also taken graduate work at UNM.

He is a member of the Rocky Mountain College Placement Association and a vice president of the College Placement Council. Jack and his wife, Jo, have four children, three boys and one girl. They live at 618 Sycamore NE.

Ken Sutton, new manager of Employment Department 3250, joined Sandia in 1951 as a staff member in the Compensation Organization. In 1954, he moved to the Employment and Personnel Department and held supervisory positions from 1957 through 1963. Ken has also served in a supervisory capacity in the Security, Labor Relations, and Community Relations organizations.

Ken has been active in a number of professional organizations, including the American Management Association, Southwest and Rocky Mountain College Placement Associations and the College Placement Council.

He has a BBA degree in Industrial Relations and Personnel Management from the University of Texas and has done graduate work at UNM.

In 1946-47, Ken served in the 8th Army Headquarters in Yokohoma, Japan.

Ken, his wife Pat, their two daughters and a son live at 8709 La Sala del Centro NE.

Bob Garcia Cited for Minority Work

At the Seventh Annual Plans for Progress National Conference, held in Washington, D.C., last month, Sandia Laboratories was cited for its efforts to attract minority group candidates, and loaned executive J. Robert Garcia (now 3230) was honored for his service to the program.

Vice President Spiro Agnew presented scrolls of appreciation to seven business executives, including Bob, and "$1 a Year" plaques were presented to the same men by Roger Lewis, chairman of the Plans for Progress Advisory Council and President of General Dynamics Corporation.

President Hornbeck was a guest at the head table for the conference luncheon and introduced Maurice Stans, the Secretary of Commerce.

The comprehensive report on Plans for Progress, prepared for President Nixon, pointed to significant gains in the number of minority members in all occupational levels — minority members now total more than one out of ten of the 10-million people employed by the 441 Plans for Progress member companies.

In the report, Sandia was singled out for its effort in hiring minority group candidates (both graduate students and faculty members) in its summer student-faculty program; recruiting for qualified Negroes at nine universities or colleges; and loaning one of its staff, himself a minority group member, to the American Telephone and Telegraph Co. to conduct a special recruiting experiment on four college campuses.

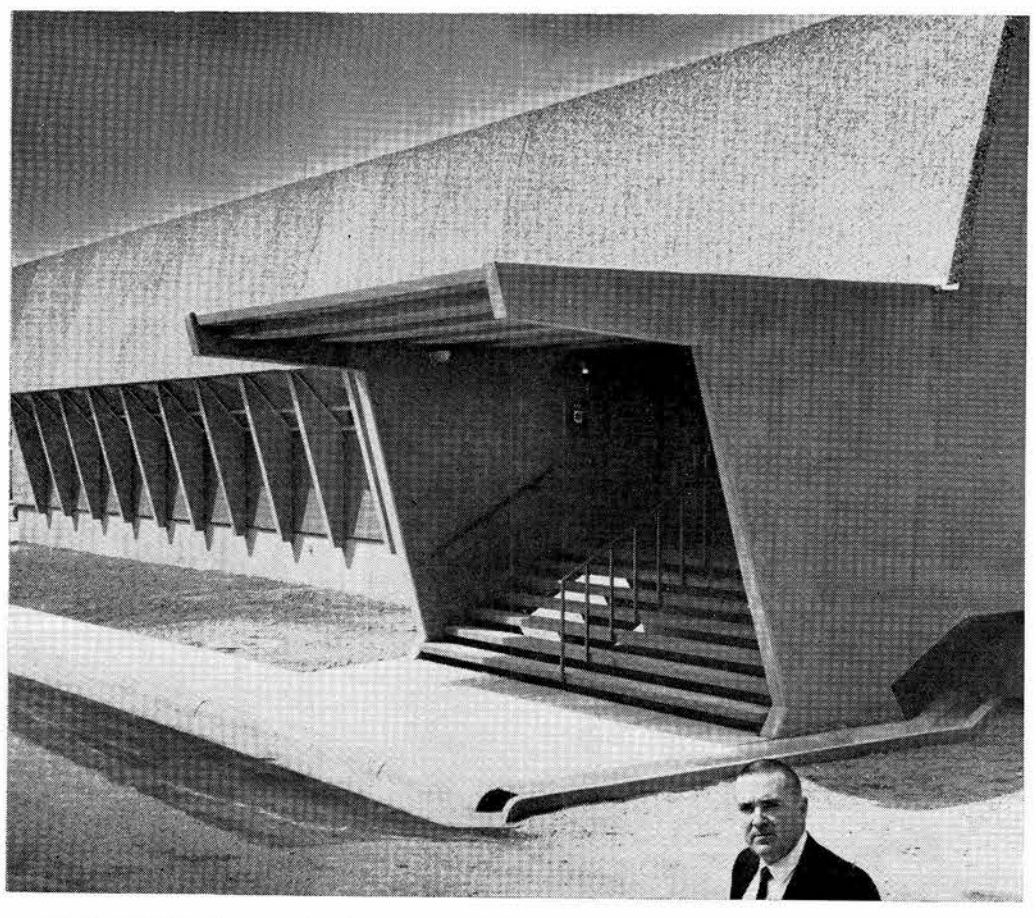
The report also states: "To help provide those already employed at Sandia with skills needed within the laboratories while also providing an opportunity for them to develop their capabilities, Sandia operates an extensive out-of-hours education program. Under this program, employees can earn the equivalent of a two-year technical institute education in mechanics or electronics. Courses in basic English, typing, stenography, intermediate and advanced mathematics, computer programming, industrial technology are also offered. These efforts and others have stimulated the recent creation at Sandia of a compliance, audit, and test division, which is involved entirely in equal employment opportunity matters."

In another part of the report, Bob Garcia was pictured with three young people to illustrate a national program started in 1968 to aid Spanish-Americans and Indians.

VICE PRESIDENT Spiro Agnew presented a scroll of appreciation to J. Robert Garcia (3230) during a recent Plans for Progress national conference in Washington in recognition of the Sandian's participation in this industry-sponsored program to aid minority groups.

FACT FINDER

Questions anyone? See this new LAB NEWS feature on page 2.



NEW HOME for the Environmental Health Department 3310 is this recently-completed structure (Bldg. 869), southeast of Bldg. 892. Department Manager Bill Kingsley says they will move in starting next month. The new facility, which has an architectural style different from earlier Sandia buildings, will house offices for the department's three divisions, laboratories, radiation monitor areas, a conference room and library, and a room for training people in the proper use of rad-safe and air breathing suits. Air sampling equipment will be installed on the roof. A distinctive feature of the building is windows set at an angle to avoid sunglare.

Patent Issued

Gordon Boettcher Invents Novel Reversible Coulometer Timer

The measurement of time — minutes, hours, days — has long been a pre-occupation of inventors. Now Gordon Boettcher of Electron Tube and Semi-conductor Division 2631 has invented a timer whose novel operating principle derives from the passage of electricity through an electrolyte between two electrodes.

Developed out of what is essentially a coulometer — an instrument for measuring electrical quantities — Gordon's timer has these capabilities: an indefinite "shelf life," i.e., long storage life; operation over a wide temperature range; a reversible mode — once the desired interval has been measured the device operates in reverse fashion to repeat the same measurement and can do this more-or-less indefinitely; time measurements from seconds to days; and compatibility with solid state devices. In addition, the timer can be used as an integrator.

The invention operates under Faraday's Laws of Electrolysis which state that the amount of material transferred between electrodes is a function of the amount of current passing through the device. In Gordon's device, when a known amount of silver is transferred from one electrode to the other, under known current conditions, a given interval of time has also elapsed. When transfer of the silver is complete, an abrupt voltage change occurs across the electrodes; this voltage change signifies the end of the prescribed time interval and can be used to trigger the next function.

The patent, entitled a "reversible electrochemical coulometer," has been assigned to AEC in Gordon's name.

RECENTLY PATENTED, several models of coulometer-timer are displayed by inventor Gordon Boettcher (2631).

HOTSTUFF—Silas Shane (4512), left, is the newest member of the Wise Owl Club of America. Silas escaped blindness by wearing a face shield when changing a heavy heating element in this hot salt bath. The element broke while being hoisted out of the tank and splashed the 1400° F solution onto Silas' face shield. He suffered only minor burns. Eusebio Montano, in background, was standing just inches away but was uninjured.

Narrow Escape from Blindness Makes Silas Shane New Wise Owl Member

Silas Shane, an electrician in Plant Maintenance Division 4512, is the newest Sandia member in the Wise Owl Club of America. It's a club you wouldn't join if you had your druthers — its exclusive membership is made up of people who have narrowly escaped accidental blindness through use of eye protection equipment.

Silas' sight was saved by wearing a face shield while changing a heavy heating element in one of the Development Shops hot salt baths. Temperature of the solution was about 1400°F.

The heating elements in the hot salt bath weigh about 150 pounds and are changed periodically when they become worn. They are withdrawn from the solution through the use of a sling and an overhead crane. It's an operation that has been performed many times.

In this instance, however, the element broke in two just as it was lifted out of the hot salt solution. The pieces fell back into the tank and the hot liquid splashed onto Silas' face shield. He suffered a minor burn on his chin and neck and small "pinhole" burns on his arms and leg, and he was treated by the Medical organization.

Eusebio Montano (4512), another electrician, was assisting on the job and standing only inches away from Silas when the accident occurred. The hot splash missed him completely.

The Wise Owl Club of America is sponsored by the National Society for the Prevention of Blindness. There are six members of the organization at Sandia Laboratories, five at Livermore.

Fact Finder

(Got a question or comment about something related to Sandia? Put it in writing, include your name and organization, and send it to FACT FINDER, 3432. Satisfaction can't always be guaranteed, but your anonymity and a factual answer is. Items of wide interest will be answered in this column; others will be answered individually.

Q. When I leave work at 5, the parking area in front of Bldg. 800 is already partly empty. Am I a square to wait until official leaving time?

A. Not at all. Employees are expected to stay on the job until quitting time. Many of these spaces are used by security inspectors who work from 7 a.m. to 3 p.m.

Q. When a messenger delivers a classified document to a Document Control Station clerk, why does she have to immediately initial the document routing in the presence of the messenger?

A. Several documents became unaccounted-for because they were delivered to an unattended station and got into that station's files. The practice of immediate initialing was made a requirement to detect delivery errors at once. This solution, of course, assumes that nobody will initial for a document which is addressed to another station.

Q. Bldg. 815 only seats about 200 people. Why don't we have a larger auditorium?

A. A matter of priority of needs. An auditorium would be nice, and is in the planning for the future, but other buildings and facilities for program needs have to take precedence. Only so much money is available in a given period for building construction.

Q. Can't something be done to increase the traffic-handling capacity on Main Street at night? Three lanes of traffic outbound at night, like we have on Gibson, would help a lot.

A. The main problem is the width of Wyoming Blvd. between Sandia Base and Central Ave. Efforts are being made to widen that stretch to six lanes, to match the width north of Central, but the City hasn't been able to get the street into a paving disrict because some of the land on the east is in the county, not the city, and therefore the owners can't be assessed for the paving. The Commission is aware of the problem and is working on it.

Comment: I've just finished my fifth out-of-hours course and would like to say what a great program it is. It's free, convenient and worthwhile. More people should take advantage of the courses.

Fact Finder: Amen.

Shock-Vibration Proof

Charles Sandoval Invents Switch

A "super-safe" switch, which cannot be accidentally or prematurely unlocked by shock or vibration, has been invented by Charles Sandoval (2325). The solenoid-actuated device has the additional advantage of being simpler, less expensive, and more reliable than other locking mechanisms with similar features.

Charles describes the device as "two springs with two masses that move in different directions and are actuated by a single signal." Spring tension and the size of the masses can be varied, but in all instances both springs would have to be broken before the device would be unsafe.

An electric coil is used to generate magnetic flux. This flux causes two plungers (separated by one of the springs) to move together; a resulting increase in flux causes a steel block (held back by the second spring) to rotate into the final position, locking the switch in a closed position. When the coil current is interrupted, the springs pull the plungers and steel block back into the locked open position.

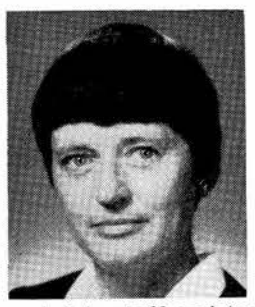
A patent for the solenoid-actuating device has been assigned to the U.S. Atomic Energy Commission in Charles' name.

"SUPER-SAFE" SWITCH, invented by Charles Sandoval (2325), has shock and vibration-proof features. Solenoid-operated device is actuated by an electrical signal.

Variable Annuity Unit Value For April 1969 $1.683

(Editor's Note: A number of readers have suggested Lab News carry the VAU value each month. We plan to do so.)

Supervisory Appointments



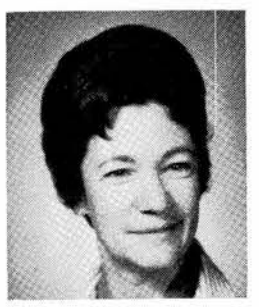
MARY HARRISON to supervisor of Personnel Services Division 3255, effective April 1.

Mary joined Sandia in 1958 as a graded employee and worked briefly as a secretary and personnel testing clerk. She was promoted to staff assistant in Staff Functions Division 3154 and later was promoted to staff member and given responsibility for testing operations in that division. In 1966, Mary was assigned to Organization and Management Development Division 3131 as a training representative, a position held until her present promotion.

She earned her BA degree in business administration at Notre Dame College, Cleveland, Ohio, and an MA in guidance at UNM. She also attended Baldwin-Wallace College in Berea, Ohio, where she earned a teaching certificate, and she has done graduate work at Western Reserve University in Cleveland. An internship was spent with the National Training Laboratories Institute for Applied Behavioral Science.

Mrs. Harrison is a consultant trainer and member of the board of directors of the Southwest Institute of Personal and Organization Development, a member of the American Association of Humanistic Psychology, the National Training Laboratories Organization Development Network, and the American Personnel and Guidance Association.

A widow, Mary has two children and lives at 2809 Charleston NE.



EMMA HOLLINGSWORTH to Secretarial Services Division 3256, effective April 1.

Emma joined Sandia in 1959 as a division secretary and subsequently worked as a department and directorate secretary. In 1963, she left Sandia to join her husband who was on active military duty in Hawaii.

She returned to Sandia in 1965 as a division secretary and later the same year was promoted to staff assistant in Division 3126. In 1966, she was promoted to section supervisor of that division.

A graduate of the University of Oklahoma with a BS in business education, Mrs. Hollingsworth has done graduate work at Texas Tech and at UNM. She has taught high school and junior college and was active in the Army education program.

Her husband, Lt. Col. Alva Hollingsworth, is currently stationed in Albuquerque where he is advisor to the New Mexico-West Texas Army Reserves.

The Hollingsworths and their daughter live at 2808 Wisconsin NE. Their son is a student at UNM.

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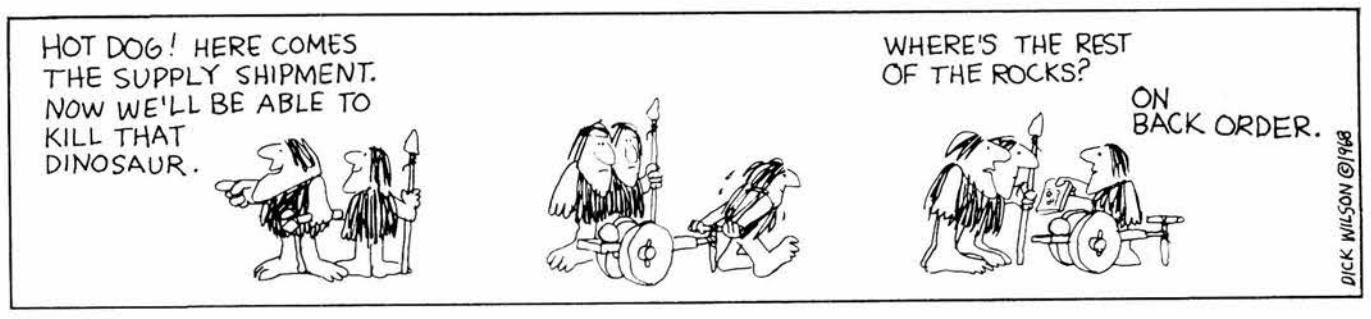
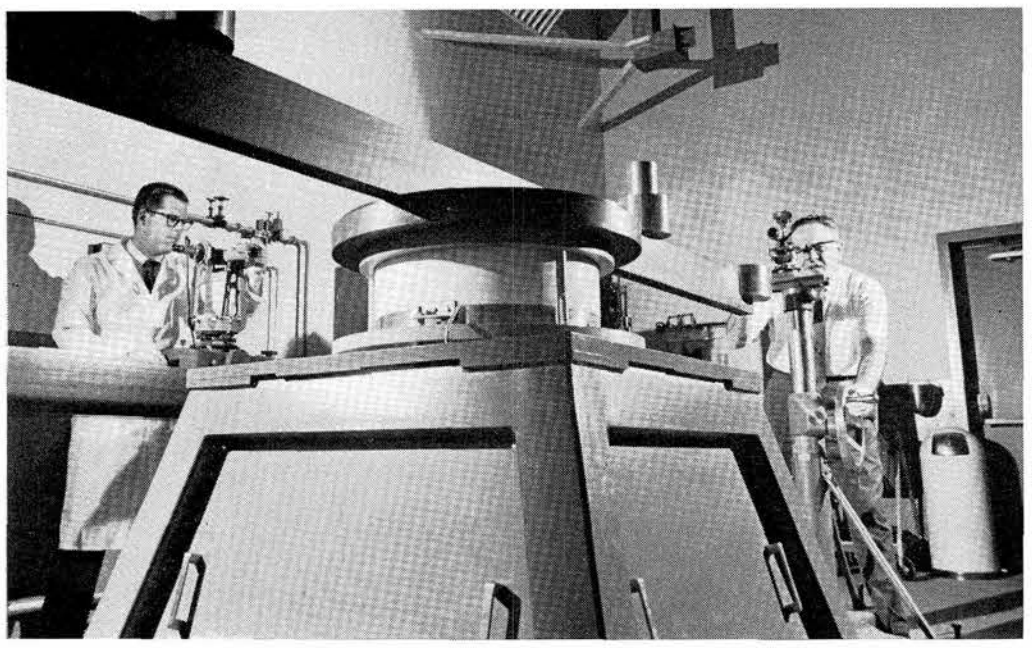


LIVERMORE NEWS

VOL. 21, NO. 8 SANDIA LAB NEWS APRIL 11, 1969



CALIBRATING CG-MOI EQUIPMENT in Livermore's recently completed Mass Properties Facility are (left) Durwood Green (8125) and Charles Sanabarger (8156). Green uses a metrology optical measuring system to establish location of weights in reference to center of equipment. Shanabarger uses a precision optical level to determine deflection in the calibration bar. Center of gravity readings on the equipment are accurate to .002 of an inch; moment of inertia readings to ± .5 percent.

Mass Properties of Test Vehicles Now Measured

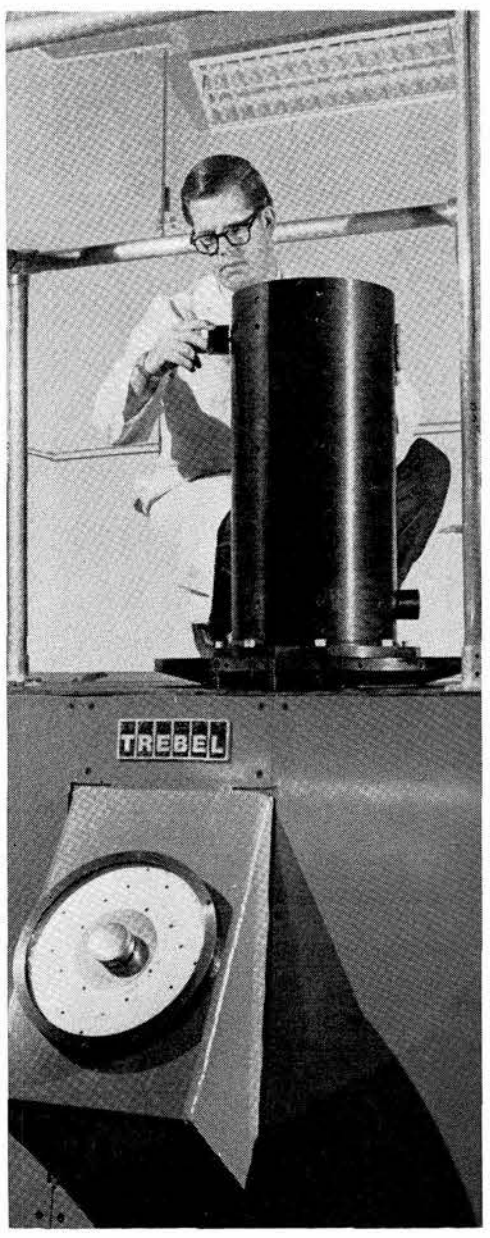
New generations of reentry vehicles make it increasingly important to determine the total mass properties of a body. Two new pieces of equipment installed in the recently completed Mass Properties Facility in Livermore's Area 8 are giving engineers more accurate information on how to correct unbalanced conditions in test vehicles and thus aid in the prediction of their aerodynamic behavior.

The CG-MOI (center of gravity-moment of inertia) equipment determines a vehicle's center of gravity and moments of inertia — pitch, yaw and roll. The dynamic balancing machine measures the products of inertia of a test unit while rotating it at high speed.

Designed to Sandia Laboratories Livermore's specifications, the CG-MOI equipment can support units weighing up to 4000 pounds. The surface plate rests on an 18-inch spherical air bearing which is, in turn, supported by 50 to 115 pounds per square inch pressure of dry nitrogen. An optical system is used to determine the position of the unit with respect to the center of the machine, and it is possible to obtain center of gravity readings accurate to within .002 of an inch. Moments of inertia, measured in slug-feet², are accurate to within one-half of one percent.

The dynamic balancing machine can spin a 200-pound unit up to 1000 revolutions per minute. Measurements of the products of inertia include the angle of unbalance (to ±1°) and the location (in two planes) and amount (measured in ounces) of the unbalance. Unbalanced conditions are corrected by shifting components about in the unit or adding weights at specific locations.

"Now that we have equipment to measure the mass properties of our R&D vehicles," says Charles Shanabarger (8156), "we recognize the need to establish measurement standards for all the agencies working on our systems. To this end we have developed devices we think acceptable for calibrating both the CG-MOI facility and the balancing machine. Their acceptance may eliminate both the equipment and operator variables in measurements that we experience today."



ADDING 30-OUNCE WEIGHT to the calibration rotor on the dynamic balancing machine gives Durwood Green data necessary to calibrate reading.

Take Note

Don Gregson, manager of Preliminary Design Department 8130, served as one of the exhibit judges in the Science Fair held March 18 at the Fifth Street School in Livermore. The fair included projects developed by students in grades three through six. Other judges were Robert Olson of Lawrence Radiation Laboratory and Robert Trimmingham of Livermore High School.

* * *

Laboratory golfers! Sign up now for the Sandia Twilight Golf League. Play begins May 7 and continues until Sept. 3. Nine holes will be played Wednesday after work at Las Positas Golf Course in Livermore. Weekly prizes are awarded to individuals with the lowest net scores. At the end of the season prizes will be presented to members of the winning team.

Beryl Hefley (8232), president of the Sandia Employee Golf Club, is league coordinator.

* * *

Earle Paxton of Library Division 8232, representing Sandia Laboratories Livermore, was a panel speaker at a meeting of the San Francisco Chapter of the American Society for Information Science on March 12. He discussed "An Evaluation of Book Catalogs." Other representatives on the panel included four librarians from IBM, LRL, Santa Clara County, and Stanford University.

* * *

Several Sandians were elected recently to offices in the Livermore-Pleasanton Elks Lodge No. 2217 for 1969-70. They include Marv Glaze (8260), trustee for a five-year term; Al Alford (8223-5), trustee for two years to complete an unexpired term created by a resignation; and George Mincks (8222), president of the holding company which has been authorized to procure the land and proceed with the construction of a new building for the lodge. Bob Ware (8161-1) was re-elected treasurer. In addition, Ken Bennett (8243-1), a Past Exalted Ruler, was reappointed Ritualist for the year, and Ernie Alford (8245) continues as trustee for the fourth year of a five-year term.

Sympathy

To Charles Duffey (8137) for the death of his mother in Tucson, Ariz., Feb. 18.

To Ron Hagen (8182) for the death of his father in Tacoma, Wash., March 1.

To Dick Jones (8332) for the death of his father in Willits, Calif., Feb. 28.

To Jack O'Connor (8312) for the death of his brother in Vietnam, March 9.

To Eugene Simpson (8125) for the death of his mother-in-law in San Leandro, Calif., Feb. 18.

To Chuck Thomas (8139) for the death of his father-in-law in Sunnyvale, Calif., March 13.

The comments of Bill McGuire, supervisor of Drafting Division 8252, augmented a recent showing of Sandia's tape/slide presentation on "Drafting" to students of Livermore's Granada High School. Purpose of the showing was to acquaint the students with the drafting technology used in today's industry.

* * *

The LRL Recreation Association (RLRA) now has a contract with the Oakland Coliseum Box Office and tickets to any event at the Coliseum may be purchased at LRL. For further information, call Jan Black, LRL ext. 7051.

* * *

John Barnhouse (8226) shot a low net score of 72 to win the first place trophy in the Sandia Employees Golf Club tournament recently. The tourney was played at the Skywest Golf Course in Hayward. Bill Ryan (8243) was the winner of the first flight (handicap of 21 or less) with a net score of 73 and Charlie Comito, a former Sandian, won the second flight (handicap 22-36) with a net of 81.

Housing and Hospital Posts to Two Sandians

Jerry Maloney (8128) was guest speaker at a recent meeting of the professional staff of the Veteran's Administration Hospital in Livermore. He described to the physicians and dentists how airborne contamination in research laboratories and hospitals has been effectively controlled through the use of Sandia-developed laminar flow principles (clean room techniques). He also showed the film, "Clean Air Is a Breeze."

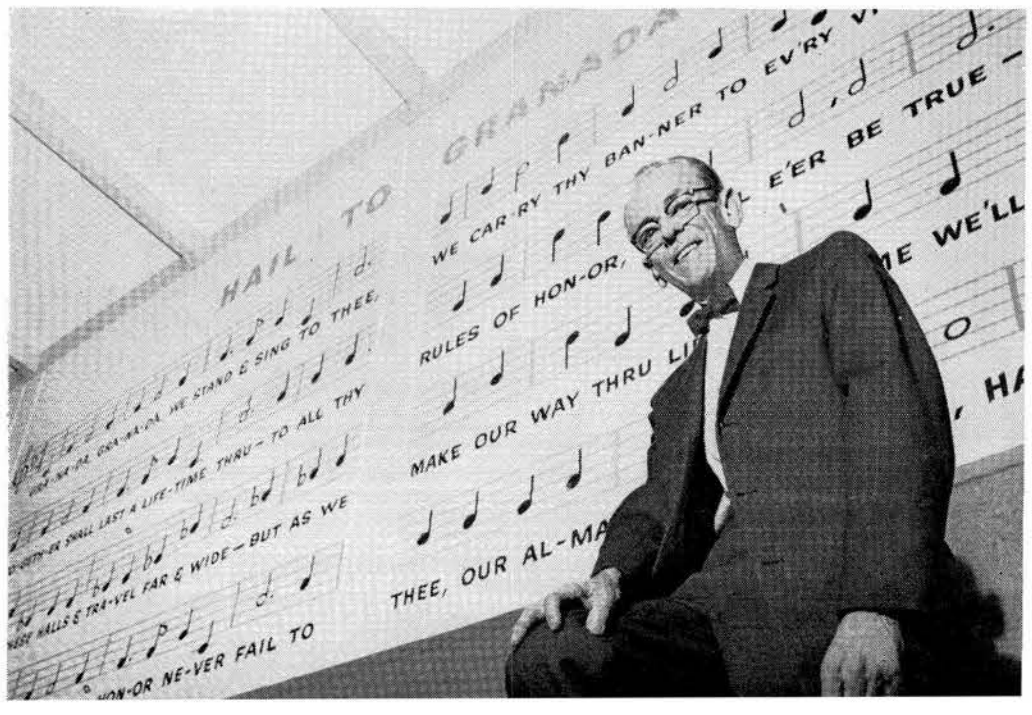
* * *

William Jamieson (8216) has been reelected president of the board of directors of Valley Memorial Hospital in Livermore for the year 1969. Bill will be serving his third year as board president and his second three-year term as board member at large. During his first three-year term, he served as treasurer in 1965 and vice president in 1966.

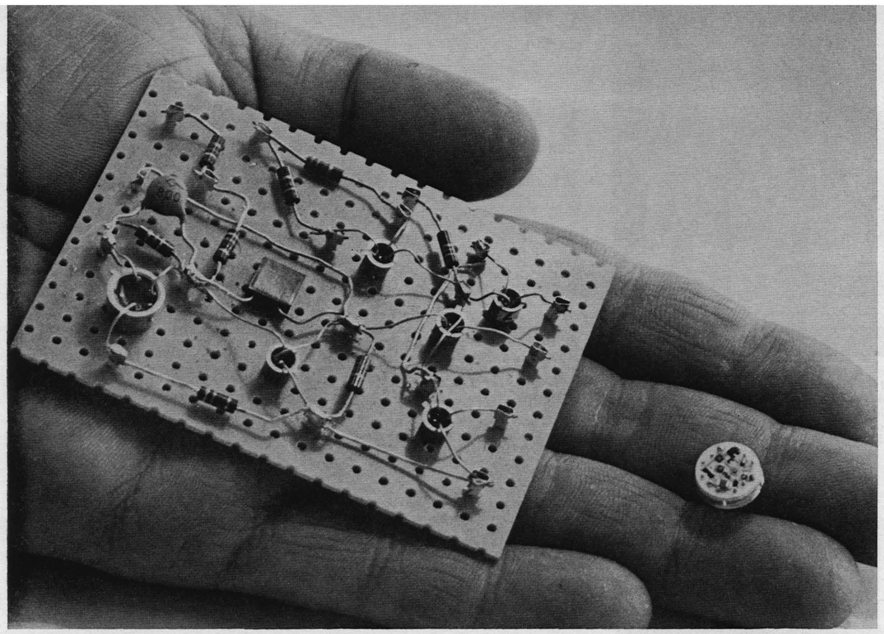
Sandia Laboratories
Promotions

H. A. Sumlin (9427) to Staff Associate Technical
R. R. Gallegos (4221) to Helper
F. Sanchez (4212) to Toolkeeper
R. V. Harter (4221) to Glass Worker
L. W. McCollum (4221) to Glass Worker
W. C. Ryan (4221) to Glass Worker
A. L. Ayotte (3415) to Mail Clerk
J. W. Sanchez (3415) to Mail Clerk
R. J. Pino (7631) to File Clerk
L. H. Mora, Jr. (4623) to Messenger
D. D. Sandoval (3415) to Mail Clerk
J. A. Lotz (7635) to Teletypewriter Operator
S. J. Savitt (7631) to Service Clerk
G. E. Velasquez (7631) to Service Clerk
J. A. Gutierrez (4333) to Property Clerk
N. J. Dziadulewicz (9415) to Message Equipment Operator
A. P. Martinez (7632) to Microreproduction Equipment Operator
F. Tenorio (9411) to Tabulating Equipment Operator
J. Montoya (9411) to Computer Facility Operator
W. A. Cole (8161) to Service Clerk
L. J. McCullar (3341) to Administrative Clerk
M. J. Kmatz (7323) to Laboratory Assistant

"HAIL TO GRANADA," the Granada High School song, now appears as a 16- x 32-foot mural in the school's new gymnasium in Livermore, thanks to technical illustrator Ubbie Hammer (8233-2). On another wall of the gym, Ubbie presented his rendition of the matador (10 feet high), Granada's mascot, and a bull which represents the school paper, "El Toro."



BOARDING COMMUTER AIRLINE at Livermore for the 21-minute flight to San Francisco International Airport are Carlton Scott (8313) and William Morehouse (8156). The new service gives employees the option of using either commuter airlines or rental cars for travel to and from San Francisco and Livermore airports. Flight schedules and other information are available from Sandia travel clerks.



MINIATURIZATION, an important aspect of thick-film hybrid microcircuits, is one of the more advanced techniques in modern technology. Yet, the basic principles of thick-film technology were evolved by ancient artisans. The breadboard circuit above was reduced to the miniature component next to it through silk screening and oven firing.

Thick-Film Hybrid Microcircuits

'. . . to Absorb A New Technology'

In his January "State of the Union" message, President John Hornbeck said ". . . there is technical challenge of the highest order—we have to create and absorb new technology . . ."

"And that," says Dick Knutson (2633), "is exactly what we are doing here." Dick was speaking of the newly-created Thick-Film Hybrid Microcircuit Laboratory. Dick and Don Schroeder (2633) have been assigned the responsibility for setting up the new facility and developing a thick-film technology.

"Thick-film hybrid microcircuitry is another technology in the electronics field that we have to understand and to absorb," says Dick.

This type of circuitry is partly an outgrowth of modern miniaturization and microelectronic technologies. However, the two principles which make the process possible date back to techniques perfected ages ago—silk screen printing and the bonding of noble metals (gold, silver, etc.) to ceramics.

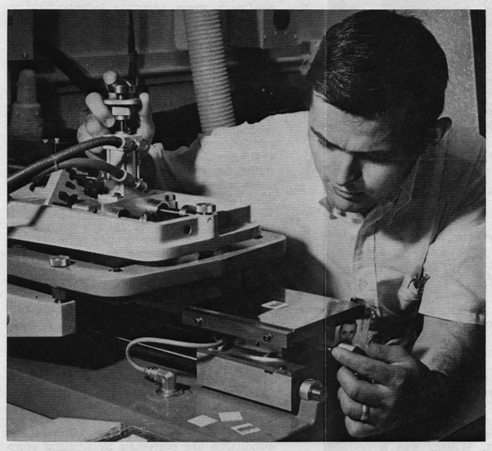
Thick-film circuitry differs from the earlier-developed thin-film circuitry not so much in physical thickness of the circuits as in the method used to apply the circuit material to the substrate (a ceramic wafer). Thin-film circuit materials generally are deposited either chemically or in a vacuum while the thick-film process utilizes silk screen printing, followed by firing in a high temperature furnace.

"It is this simplicity of process that makes the technology so useful," Don says. "We can make a small number of circuits designed especially for R & D at very low cost. Commercial special purpose integrated circuits, on the other hand, are quite expensive when only a few are needed."

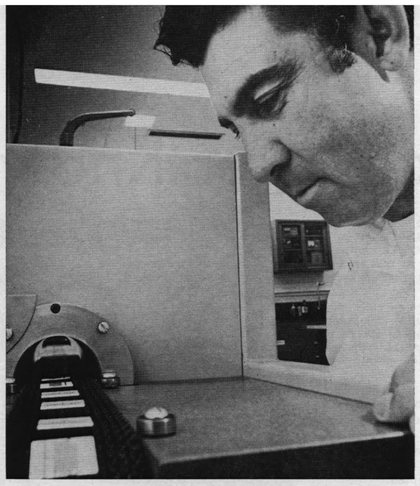
"Our responsibility in the thick-film area is to evaluate, apply, and innovate a technology that has only recently become prominent," says Dick.

SILK SCREEN is checked against original mask by Ruth Wright (2633). In this case, a fine weave stainless steel mesh is used instead of silk.

HIGH PRECISION silk screen press prints the circuits on a thin ceramic substrate. Thick-film technology lends itself to automation. Don Schroeder (2633) sets up the press for a "run."

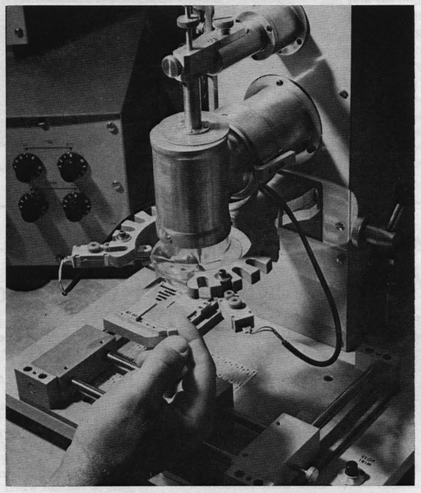


GRAPHICS OF A NEW TECHNOLOGY—Small, rugged and reliable are characteristics of components made by the thick-film process. The new lab is "another useful tool in Sandia's inventory."

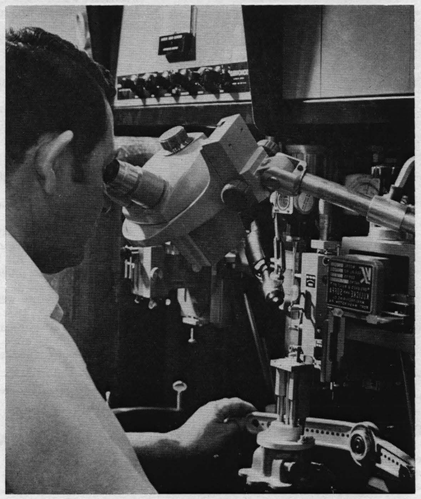


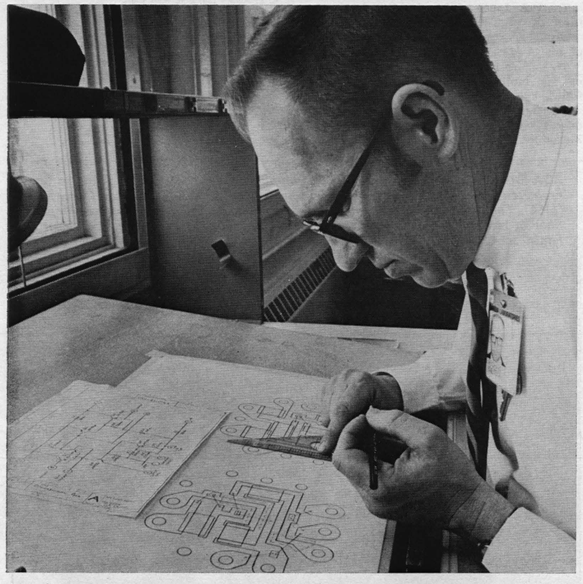
HOT SPOTS—After circuits are printed, the substrates pass through this belt furnace at about 1800°F. Joe Silva (2633) oversees the firing process.

MINIATURE SANDBLAST—This abrasive trimmer, which is really a precision sandblaster, can trim resistors within tolerances of .1 percent with a cut as fine as 10 mils. Circuits are trimmed to modify operating characteristics.



MICRO ASSEMBLY LINE—Final step in the thick-film hybrid process is bonding tiny transistors, capacitors, or other devices, in chip form, to the circuit. These chips may be a small .020 inches on a side and .007 inches thick. Eliseo Chavez (2633) operates ultrasonic wire bonder which connects the chips to substrate with one-mil wire.





FIRST STEP of a simple process for obtaining a highly sophisticated component. The initial circuit layout is done on a 20:1 scale and reduced photographically. Dick Knutson (2633) translates a circuit schematic into a microcircuit layout.

Authors

R. A. Trudo (5151), "Simultaneous Operation of Auxiliary X-ray Tubes for Commercial Generators," January issue, JOURNAL OF APPLIED CRYSTALLOGRAPHY.

H. D. Christiansen (3312) and J. C. Golden (former Sandian), "Health Physics Considerations in the Operations of Sandia Pulsed Reactor II," April issue, HEALTH PHYSICS.

M. A. Gusinow, J. B. Gerardo and R. A. Hill (all 5234), "Spectral Temperatures of Non-uniform Plasmas," March issue, JOURNAL OF QUANTITATIVE SPECTROSCOPY AND RADIATIVE TRANSFER.

M. Moss (1224) and D. M. Schuster (5431), "Mechanical Properties of Dispersion-Strengthened Spray — Quenches Al-V Alloys," March issue, TRANSACTIONS QUARTERLY OF THE AMERICAN SOCIETY FOR METALS.

M. E. Morris and W. J. Whitfield (both 1742), "A New Approach to the Microbiological Sampling of Surfaces," January issue, APPLIED MICROBIOLOGY.

D. R. Morrison (1713), "Matching Algorithms," January issue, JOURNAL OF COMBINATORIAL THEORY.

R. E. Nettleton (5151), "Self-Consistent Phonon Treatment of Second-Order Displacive Ferroelectric," Vol. 2, page 401, ZEITSCHRIFT PHYSIK; "Polarization-Dependent Rayleigh Scattering in a Coarse-Grained Ferroelectric Ceramic," Vol. 39, page 3646, JOURNAL OF APPLIED PHYSICS.

C. M. Percival (5133) and J. R. Hutchinson (University of California/Davis), "Higher Modes of Longitudinal Wave Propagation in Thin Rods," Vol. 44, No. 5, JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA.

J. E. Schirber (5150) and D. W. Shanfeldt (former Sandian), "Simple Low Temperature Closure and Electrical Leadthrough for High Pressure Gas System," Vol. 39, page 270, REVIEW OF SCIENTIFIC INSTRUMENTS.

G. A. Shelton (9342) and K. J. Touryan (9340), "Multifluid Theory for Stagnation Flow of Partially Ionized Plasma," December issue, PHYSICS OF FLUIDS.

K. L. Shipley (9321), "Surface Ionization of Argon Observed in Plasmajet Tests," June issue, AMERICAN PHYSICAL SOCIETY BULLETIN.

G. C. Smith and R. C. Hughes (both 5113), "Magnetic Field Effects on Triplet Exciton Interaction in Anthracene," Vol. 20, page 1358, PHYSICAL REVIEW LETTERS.

H. J. Stein (5111), "Infrared Studies of Oxygen and Carbon Associated Defects in Electron Irradiated Silicon," Nov. 14 issue, RADIATION EFFECTS.

C. A. Trauth (1741), "A Multi-Stage Decision Model for Mission Noncontamination Requirements," Vol. 1, No. 1, pages 135-149, SPACE LIFE SCIENCES; with R. E. Woolsey (University of Texas), "Integer Linear Programming: A Study in Computational Efficiency," March issue, MANAGEMENT SCIENCE.

F. R. Tuler and B. M. Butcher (both 5161), "A Criterion for the Time Dependence of Dynamic Fracture," December issue, INTERNATIONAL JOURNAL OF FRACTURE MECHANICS.

D. C. Wallace (5151), "Pseudopotential Calculation of the Thermal Expansion Coefficient of Sodium and Potassium," Dec. 15 issue, PHYSICAL REVIEW.

W. E. Warren (1721), "Corrigenda to Some Problems in Two-Dimensional Electrostriction," Vol. 47, pages 109-110, JOURNAL OF MATHEMATICS AND PHYSICS.

R. C. Wayne (5132), "The Effect of Hydrostatic and Shock-Wave Compressions on the Magnetization of 31.4 at .% Ni-Fe Alloy," January issue, JOURNAL OF APPLIED PHYSICS.

G. H. Whiting (9522) and T. Feldman (University of New Mexico), "Applicability of Heat Pipes to Energy Conversion Systems," November issue, MECHANICAL ENGINEERING.

H. H. Wicke (1721), "A Sum Theorem for T_2-Spaces Having Wavelength-Bases Locally," Vol. 15, page 660, NOTICES OF THE AMERICAN MATHEMATICAL SOCIETY.

J. M. Worrell, Jr. (5261), "The Closed Continuous Images of Metacompact Topological Spaces," Vol. 25, pages 175-179, and "A Characterization of Metacompact Spaces," Vol. 25, pages 171-174, PORTUGALIAE MATHEMATICA; "On Conditions of Absolute Theta-Refinability," Vol. 15, page 948, "Paracompactness as a Relaxation of Full Normalcy," Vol. 15, page 661, "On Continuous Mappings of Meta-compact Cech Complete Spaces," Vol. 15, page 402, NOTICES OF THE AMERICAN MATHEMATICAL SOCIETY.

Worrell and Wicke "On Monotonically Complete Subspaces of T_2-Spaces Having Wavelength-Bases Locally," Vol. 15, page 659, "On Uniformly Monotonically Complete Mappings," Vol. 15, page 561, and "Concerning a Class of Completely Regular Spaces Described by Arhangel'skii," Vol. 15, page 352, NOTICES OF THE AMERICAN MATHEMATICAL SOCIETY.

W. A. Stark (5272) and George Jura (University of California at Berkeley), "A Technique for Measurement of the Heat Capacity of Metals Under Pressure," April issue, REVIEW OF SCIENTIFIC INSTRUMENTS.

R. T. Johnson (5132), "Response of Self-Oscillating Rubidium Vapor Magnetometers to Rapid Field Changes," April issue, REVIEW OF SCIENTIFIC INSTRUMENTS.

S. R. Dolce (9113), T. Darrah (Princeton University) and W. M. Gibson (Bell Telephone Laboratories), "Charge Distribution in ^{252}Cf Spontaneous Fission," April issue, PHYSICAL REVIEW.

L. W. Davison (5133), "Linear Theory of Heat Conduction and Dissipation in Liquid Crystals at the Nematic Type," April issue, PHYSICAL REVIEW.

D. E. Amos (1722), "Representations of the Bivariate t Distribution," April issue, MATHEMATICS AND COMPUTATIONS.

D. W. Braudaway (7452) and R. R. Mohler (University of New Mexico), "Optimal Control of the Radioactive Voltage Standard," April issue, ISA TRANSACTIONS.

Speakers

R. L. Park (5441), "Chemisorbed Impurity Structures on Metal Surfaces," American Vacuum Society meeting, March 26, Norman, Okla.; "Prospects for LEED (Low Energy Electron Diffraction) Structure Analysis," Third LEED Theory Seminar, March 20, Yale University.

J. E. Houston (5442) and R. L. Park (5441), "Cross-Correlation Techniques in Auger Spectroscopy," 29th Annual Conference on Physical Electronics, March 19, Yale University.

W. W. Allison (3351), "The High Potential Technical and Economical Control of Hazards by Designers," University of New Mexico School of Mechanical Engineering, March 19; "The High Potential Technical and Economical Control of Hazards (the HIPO-TECH Method)," Massachusetts Tri-State Safety Conference, April 1, Boston.

D. C. Wallace (5151), "Lattice Dynamical Calculation of Thermodynamic Properties of Solids," Virginia Polytechnic Institute seminar, March 26, Blacksburg, Va.

N. S. Gillis (5151), "Ferroelectricity in the IV-VI Compounds," Colorado State University seminar, March 31, Fort Collins.

D. R. Morrison (1724), "Artificial Intelligence," Mathematical Association of America meeting, April 11-12, Flagstaff.

J. C. Crawford (5153) and R. A. Damerow (9114), "An Explosive Generator-Powered Theta Pinch"; M. Cowan and E. C. Cnare (both 5261), "Pulsed Power from Explosive Generators," Symposium on Engineering Problems of Fusion Research, April 8-11, Los Alamos.

G. A. Samara (5132), "Recent Studies of Ferroelectric Properties Under Pressure," Pennsylvania State University Physics and Materials Science Laboratory Seminar, March 28, University Park, Pa.

Robert L. Gerlach (5441) and Thor N. Rhodin (Cornell University), "Alkali Metal Adsorption on Single Crystal Nickel Surfaces," Surface Science Effusion and Evaporation Symposium, April 29, Los Alamos.

F. Cericola (7321), "A Technique for Generation of High Sinusoidal Velocities and Accelerations," 16th meeting of the IMOG Subgroup on Environmental Testing, March 12-13, Burlington, Iowa.

A Binarian Tale

Guys and Dolls - - Computer Knows All

SANDY JEWETT (4333) one of the Lab's 104 single girls.

The other day we were chatting with our friendly IBM 7090, I-B for short, and we casually suggested that the Laboratories must have the top catches in this area of marriageable females and eligible bachelors.

Well now, you don't just casually suggest anything to a computer. Computers are anxious types and tend to overreact. I-B whirred briefly and then binarily said "There are exactly 432 single persons between the ages of 18 and 32 working at Sandia Laboratories."

Intrigued, we pursued the matter.

"And how many of these singles are female?" we asked.

"There are 104 females and 328 males," I-B answered.

"Tell us more," we prompted.

"Well, if you're interested in figures, the average Sandia single girl is 23.4 years old, has been at Sandia 1.82 years, works in a secretarial area, has taken 1.6 out-of-hours courses, originally came from New Mexico, and her average phone number is .....

"Enough!" we yelled. "Just to be fair, what about the average eligible bachelor?"

"He is a staff member technical and has worked at Sandia for 3.26 years. He is 25.9 years old, has a college education, is five-ten and weighs 163 pounds, and comes from, of all places, Pennsylvania."

"Er, to get back to the girls, I-B. How about certain critical measurements?"

I-B faltered just a moment, then murmured, "Well, those figures are not available for publication. But you can be sure of one thing—they're average . . ."

ERROL EERNISSE (5112) one of 328 bachelors at Sandia.

Events Calendar

April 11-12 — Albuquerque Civic Light Opera Assn., presents "The Boy Friend." UNM Popejoy Hall.

April 11-13 — "MacBeth" for three actors, two dancers, light and sound. Old Town Studio. For reservations tel. 242-4602.

April 12-13 — Bandelier/Cochiti overnight backpack. N.M. Mountain Club, leader George Steck, tel. 299-2313.

April 13 — Tree Spring/Embudo Cave Loop in the Sandias. N.M. Mountain Club, leader Hank Taylor, tel. 282-3254.

April 13-14 — Baseball, Albuquerque Dodgers vs. El Paso. Albuquerque Sports Stadium.

April 19 — Nizhoni Indian Dances, Johnson Gym.

April 19-20 — Canyon de Chelley car camp. N.M. Mountain Club, leader Ellen Hippeli, tel. 255-8295.

April 20 — Guadalupe Peak, Manzano Mountains. N.M. Mountain Club, leader Marjorie Lenth, tel. 256-0282.

April 23-26 — Baseball, Albuquerque Dodgers vs. Little Rock. Albuquerque Sports Stadium.

April 24 — Albuquerque Symphony Orchestra, Maurice Bonney conducting. UNM Popejoy Hall.

April 25-27 — YWCA trip to Lake Powell including all-day cruise. For information, tel. 247-8841.

Ultrasonic Cleaning Machine Makes Fast Work of Venetian Blinds

An ultrasonic cleaning machine for venetian blinds has made it possible for Janitor Service Division 4574 to perform a difficult job efficiently and quickly — annual cleaning of the more than 1800 venetian blinds at the Laboratories.

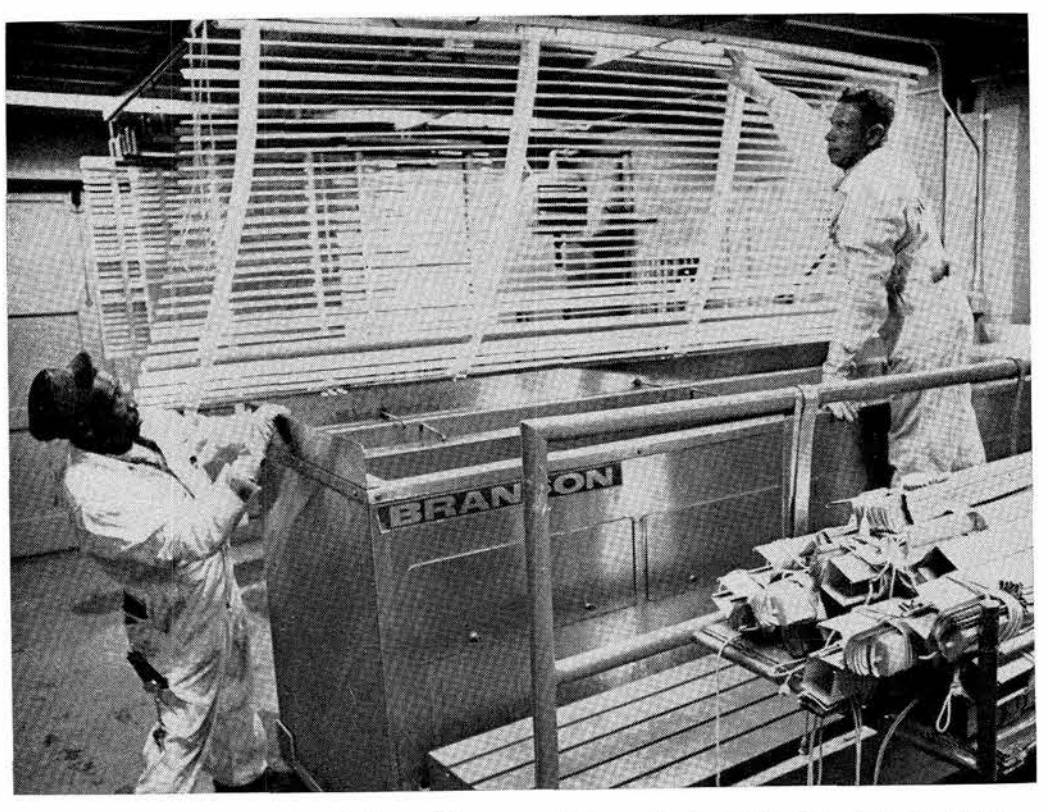
The cleaning job takes about five minutes for each blind.

The blinds are dunked in a tank of cleaning solution containing a special detergent.

High frequency sound waves create a pulsing action — the formation and violent collapse of minute bubbles — in the solution. The pulsing action of countless small and intense impacts removes soil from the immersed blinds. Because ultrasonic energy penetrates wherever the cleaning solution reaches, parts are cleaned thoroughly and rapidly.

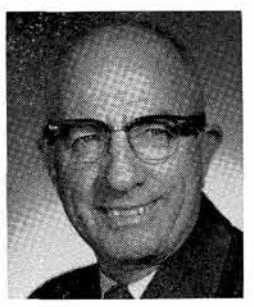
Blinds are removed from offices after regular working hours, transported to Bldg. 877 for the ultrasonic cleaning, and returned the same night. To do the same job with the blind in place would take one man about 45 minutes.

The ultrasonic cleaning machine was adapted from commercially available equipment by Lloyd Wilson, Division 4575 supervisor, and Earl Craven, supervisor of Building and Facilities Design Division II 4543.



FAST WORK—M. T. Hodge (left) and Lawrence Metoyer (both 4574) can clean an eight-foot venetian blind in less than five minutes using this ultrasonic cleaning machine. The special cleaning solution in the tank is agitated by high frequency sound waves.

Western Electric-Sandia Veteran Wilson Maglidt to Retire May 31



H. Wilson Maglidt, manager of Photographic Services organization 3450, will retire May 31 after 32 years with Western Electric. He has been on special leave of absence from WE and assigned to Sandia Laboratories for more than 19 years.

During his years in Albuquerque, Wilson has been active in the Episcopal Church, civil defense, patriotic organizations, and the Boy Scouts. He holds the Wood Badge, high rank of Scouting, and has filled a number of posts including his present chairmanship of the Manzano District Eagle Board of Review. In lieu of a retirement party, friends and co-workers are asked to contribute to the Boy Scouts. Contributions may be sent to Sandia Scouters Bill Gardner (1500) or Luke Heilman (7400), who will make the presentation to the Kit Carson Council in Wilson's honor. Gifts may also be mailed directly to Boy Scouts of America, 110 Richmond Dr. SE, 87106.

An industrial engineer, Wilson was a member of the original management team sent to Sandia when Western Electric took over responsibility for the facility from the University of California. He has since served as manager of business methods, technical staff administration service, and graphic arts organizations, and set up the first operations research group in the Laboratories. One noteworthy project led by Wilson while heading business methods brought about improved material control at Sandia.

Wilson attended North Carolina State College of Agriculture and Engineering, is a graduate of Johns Hopikns University, and holds a Master's degree from the University of New Mexico. With the Western Electric Company, he served at a number of locations, including the Baltimore Plant, North Carolina Shops, and the World War II Scranton Shops. He represented WE on National Boards of Production Planning, Job Analysis, and Cost Reduction.

He was recently honored in recognition of his part in the **Albuquerque Tribune** Merry Christmas project which included production of motion pictures of families of New Mexico Air National Guardsmen for showing to these men stationed in Vietnam.

Wilson and his wife Betty plan to tour Europe during the first year after his retirement, then return to Albuquerque for continuation of civic activities. They'll also save time for bridge, golf and skiing.

Labs Man Named CAP Commander

W. Dale Parsons (9426) has been appointed Commanding Officer of the New Mexico Wing of the Civil Air Patrol.

A CAP Lieutenant Colonel, Dale was Chief of Staff for the former commander, and has been on the staff of the Wing headquarters for the past four years. He has held positions of Operations Officer, Deputy for Plans and Programs, and Deputy Commander.

The New Mexico Wing of the CAP has approximately 700 members.

Dale, his wife Dianne, and their eight-year-old son live at 12312 Collier Court NE.

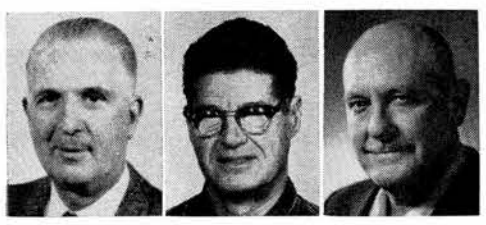
Service Awards

20 Years

Emanuel Alford 8245 | Arnold Bentz 7213 | Henry Dancy 2491

Robert Little 7226 | Maxwell Miller 4511 | Norman Ollman 7631

15 Years



Willis Bisenius 2491 | Lawrence Bowen 4252 | George Norris 7214

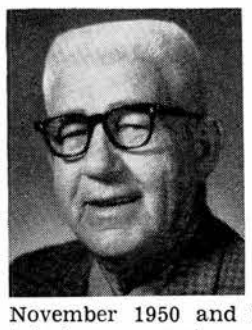
Bruno Paoletti 4253 | Alice Simon 7631

10 Years

April 11-24

Clarence Himes 4514, John Temple 9214, John Cowie 7226, Barbara Ford 1720, Mary Brunacini 4131, Glen Loeppke 1523, Howard Romme 4113, Wesley Kimbrel 4512, Jean Schuster 5130, Lillian Sprague 2852, Arminta Robinson 3126, Audrey Burns 4623, and Harold Hunt 8222.

Retiring

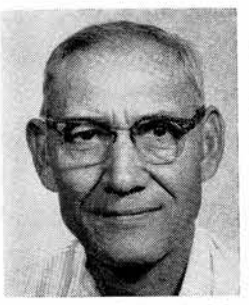


The early retirement feature of the Laboratories' Retirement Plan has attracted another long-time employee. Oakley Belden of Quality Operations Division 2491 will retire the end of this month. He joined Sandia in November 1950 and has worked in electrical components assembly, field inspection, and quality control. In his present position he handles the department budget and tester contracts.

Mr. and Mrs. Belden have two children — a son in the Air Force, and a daughter living in Albuquerque — and six grandchildren. They own a truck and camper and a boat, and their plans include lots of traveling, boating and fishing.

"This company is the best employer I've ever worked for," Oakley says. "If you consider all the benefits and just apply yourself, you'll never have any complaints.

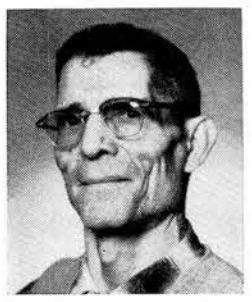
"One reason I'm taking advantage of Sandia's early retirement," he says, "is to be able to make an extended trip into the Northwest this summer. I didn't want to try to see that much country in a two- or three-week vacation. Besides that, I'm tired of regimentation, I'm ready to retire — it will sure be nice to sleep an hour longer in the mornings if I want to."



Isidoro Apodaca of Janitor Service Section 4574-5 will retire April 30. He was employed by Sandia in July 1952 and has worked the entire time on the night shift. "After more than 16 years of night-shift work, I'm going to have to get used to staying up during the day," Isidoro says. Before coming to Sandia, he worked for six years with the Albuquerque Public Schools.

Mr. and Mrs. Apodaca and their daughter will continue to live at 1524 Cornell SE. They plan a trip to Las Vegas, Nev., and Isidoro will keep busy with his gardening. "I've been telling the people I work with that I already have a rocking chair and now I'll be able to just lean back in it and take life easy."

* * *



Julian Baca, a service clerk in Self-Service Stores Section 4613-3, will retire April 30 after 17 years with Sandia. He has worked in most of the main buildings at the Laboratories.

Julian and his wife plan to remain in Albuquerque (they live at 11 La Poblana NW). They have three married children, one of whom lives in Vancouver, Canada, where the Bacas visited last summer on vacation.

For 15 years before joining Sandia Julian was a carpenter, and he plans to do some woodworking as a hobby after his retirement. He will also sell commercial household products, but plans to set aside some time for fishing and relaxing.

* * *

Hans Baerwald, a staff member in Solid State Electronics Research Division 5153, is retiring April 30. Before joining Sandia in March 1959, he had worked for many years in the research laboratory of Celvite Corporation in Cleveland.

Hans and his wife Eva have one daughter, living in Los Angeles. They will continue to reside at 2732 Chama NE. Mrs. Baerwald is chief reference librarian at UNM's Medical School. "Both of us enjoy our work, so my wife will continue with her job and even though I'll be retired, I'll be affiliated with Sandia as a no-fee consultant," Hans says.

"As for retirement plans," he continues, "I'm an avid gardener and climber (he is a member of the New Mexico Mountain Club), I want to do some publishing, I'll do some reading, and just for fun I may take some courses at the University."

Sandians, Scouts Reenact Boat Trip

On June 23, a group of Boy Scouts and scout leaders will duplicate part of the historic exploratory trip that Major John Wesley Powell took down the Colorado River and through the Grand Canyon 100 years ago.

The group of 10 scouts and 10 adults, including six Sandians and sons of four Sandians, will make a 90-mile four-day journey by boat down the Grand Canyon of the Colorado River. Going on the trip will be Mark Percival (5133), scoutmaster; Steve Benzley (5162), troop committee chairman; Gerald Barr (5162), troop committeeman; Russ Acton (5424) and his son Bryan; Dennis Cronin (9324) and son, Bruce; and Lynn Ritchie (1713) and son, Paul. Mike Sweley, son of Jeni Sweley (4118), will also go on the outing.

The group will charter a professional outfitter who will supply rubber rafts, guides, boatmen, and food. They will embark at Lee's Ferry, Ariz., below the Glen Canyon Dam, and go downstream as far as Phantom Ranch near the western end of the Grand Canyon. They then will hike out to the south rim of the canyon.

To raise the necessary $1000 to pay expenses for the boys, the troop is conducting a paper collection drive. Mark, the scoutmaster, asks that persons having large amounts of scrap paper which they wish to donate contact him at 299-0535. An additional contact is Steve Benzley, phone 298-0274.

June Music Festival Outstanding Local Cultural Event

The June Music Festival will mark its 28th season this year, making it one of the oldest chamber-music societies in the United States.

The series originated during World War II when Albuquerque's population was a mere 62,000 and cultural events consisted mainly of productions by the Albuquerque Little Theatre and the University of New Mexico drama department. Mrs. Albert Simms and a group of Albuquerque people interested in sponsoring music and art in New Mexico conceived the idea of a series of chamber-music concerts, and for the first two seasons the concerts were presented at the Simms residence on Rio Grande Blvd. Later concerts have been given in the Albuquerque Little Theatre.

Through the years some 50 musicians have performed during the festival, and, the repertoire has included a wide range of classical, romantic and contemporary works.

This season the festival will feature six performances by The Fine Arts Quartet, Josef Gingold, and Ralph Berkowitz. The Quartet, one of America's foremost ensembles, have made a number of European concert tours and their recording of the complete Beethoven cycle of quartets has received high praise from critics.

The 1969 concerts will be June 6, 8, 11, 15, 18, and 21, at 8:15 p.m. at the Little Theatre, 224 San Pasquale SW. A subscription for all six concerts is $10. Max Linn (3400) is currently on the Festival's Board of Directors, and a patron for the past several years has been Bob Henderson (2000). Further information may be obtained from them or by writing June Music Festival, Inc., Box 7338, Albuquerque 87104.

Sympathy

To Tillie Pierce (3463) and Howard Shelton (3134) for the death of their mother in Albuquerque, March 28.

To Jim Armijo (4574-5) for the death of his father, March 26.

To Florentino Rael (4574-5) for the death of his father-in-law, March 26.

To Walter Powdrell (4574-5) for the death of his mother, March 26.

To Lowell Jones (7216) for the death of his father, March 28.

To Laudente Gallegos (4574) for the death of his father in Albuquerque, March 17.

To George Baldonado (4152) and Florencio Baldonado (4614-2) for the death of their father in Albuquerque, March 28.

To Esquipula Narvaez (4574) for the death of his brother in Albuquerque, March 26.

PUT AWAY THE BEAN POT, pardners, ride over to the Coronado Club after work tonight and join the TGIF crowd for the Club's famous western chuckwagon roast beef buffet at social hour. Al Wyer (3131) and Peggy Stevens (5431) will be there along with Sol Chavez (4514) and the mighty Duke City Brass making happy music.

Roast Beef Tonight, Mulligan Stew Manana at Coronado Club

Only a few days remain until the income tax deadline. If taxes and surtaxes have wiped you out, then sing the blues at the Taxpayer's Bawl tomorrow night at the Coronado Club. A free bourbon taste has been arranged by the Club from 7 to 8 p.m. A soup kitchen serving mulligan stew will be in operation from 8 to 9 p.m. Frank Chewiwie and the aggregation will be on the bandstand from 9 to 1 a.m.

Tickets are a nominal two bucks ($2.50 for guests).

Social Hours

Tonight, the Club's famous chuckwagon roast beef will be the buffet feature for social hour. Sol Chavez and the mighty Duke City Brass will make the happy music. The fun starts right after work tonight with special social hour prices through 8 p.m. The buffet is served from 6 to 8 p.m. while the band plays from 6 until 9 p.m. Cheryl Warnke and piano will entertain in the main lounge with a sing-along from 9 p.m. until midnight.

On Friday, April 18, the Rhythm Masters will be on the bandstand while the chicken buffet will be spread.

Tommy Kelly and the smiling Irishmen return to the bandstand on Friday, April 25. The Club's kitchen staff will wheel out the Mexican food buffet.

* * *

Baton Twirling Classes

It's not too late to enroll your youngsters in baton twirling classes starting tomorrow morning at the Club. Marsha Folts, 1965 New York State Champion, will instruct. Fee is $8 for the 10-week course.

* * *

Bridge

Ladies Bridge meets Thursday, April 17, at 1 p.m. Duplicate bridge meets Tuesdays at 7 p.m.

* * *

Fly Fishing Class

The Coronado Club is sponsoring a six-week fly tying and fly fishing course which will begin at the Club Monday, April 21. Instructor will be Sam McAlees (9513). The class will meet Mondays from 7 until 9 p.m. and cover fly fishing history, nomenclature, mechanics of fly tying, tools and materials, fly casting, wet and dry flies, fish stories and movies. Sam has taught the popular subject in the past to informal groups during noon hours. Enrollment fee is $1.

* * *

Noon Fashion Show

Next Tuesday the Club will present a fashion show by Lynn's during the lunch hour. Rosario Ayers will be moderator.

Sandia Safety Signals

Take Note

Outdoorsmen Don Mattox (5442) and Milo Conrad (9121) will appear on TV Sunday to discuss conservation principles following a showing of "The Wonderful World of Wilderness," a slide-presentation they have produced. Watch for them on the Gordon Sanders show, "A Closer Look," Channel 4, at 10:30 a.m.

* * *

ASTME Region VII has elected Ed Roth (5438) to a two-year term as director.

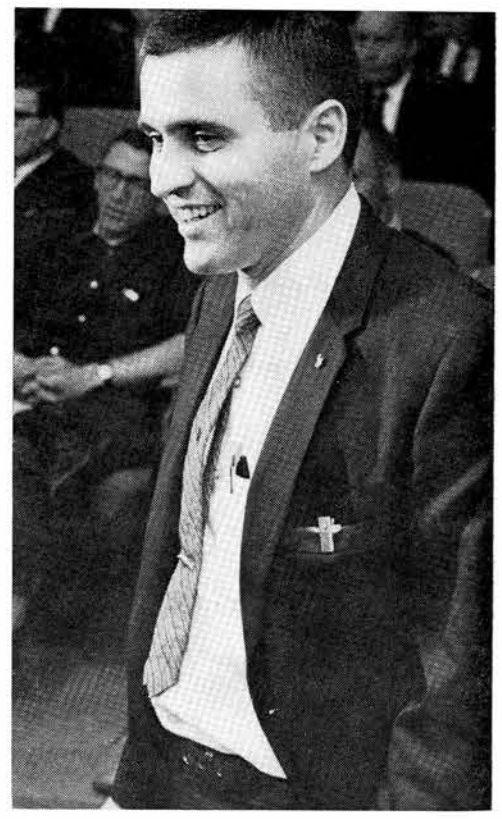
An active member of the technical organization, he has served on the standards committee of the local chapter, is currently on the regional ASTME speakers list, and received the national ASTME gold medal in 1966.

In addition, he has contributed 12 papers, eight articles, and two books to Society publications, and presented four ASTME manufacturing engineering clinics and two workshops. He is also active in standards work as chairman to two USASI metrology groups.

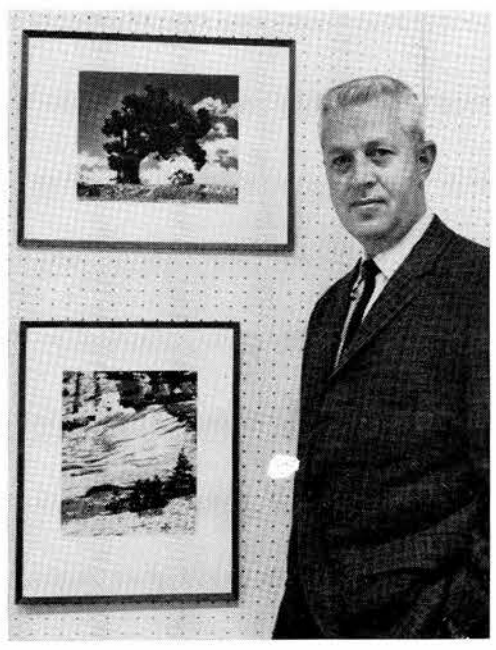
Ed has been at Sandia Laboratories since 1950. He is a graduate of Penn State and has done graduate work at the Universities of Colorado and New Mexico.

* * *

Elected recently, John McKiernan, supervisor of Isotope Projects Division 9521, will take office in June as vice president of Region VIII of the American Society of Mechanical Enigneers. Active in ASME since 1947, John has held a number of local, regional and national office and committee positions. Region VIII includes New Mexico, Colorado, Wyoming, Idaho and Montana. He will serve as vice president until June 1971.



ASTRONAUT Harrison Schmidt discussed "Manned Lunar Exploration: Some Scientific Goals" at a recent Sandia Research Colloquium. He was introduced by Al Stephenson of Isotope Projects Division 9521. Sandia has technical direction responsibility for the SNAP 27 isotopic generator which will be used to power scientific experiments placed on the lunar surface by the Apollo astronauts this summer.



PHOTOGRAPHER Oscar Goodwin of Photographic Services Division 3455 is author of the extensive display in the elevator lobby of Bldg. 802. The photographs were made at Yosemite National Park and vicinity during a two-week Ansel Adams photographic workshop which Oscar attended.

SANDIA'S DAISY BELLE, Claudia Garlick (5436), and Noble Johnson, supervisor of Community Relations Division 3433, represented Sandia Laboratories in the downtown parade that launched Albuquerque's spring cleanup campaign. The drive will continue through April.

EXCEDRIN HEADACHE NO. 33—Take one TR-4 with soft top, accelerate to 55MPH, lose control on patch of ice, roll 360 degrees, and this is the result. John Davenport (2344) credits fastened seat belts for saving his and brother Peter's lives in accident en route to Sierra Blanca ski resort. Sole injury was Peter's minor scalp laceration. John hasn't figured out yet how skis, on rack outside car, escaped damage.